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PHOTOGRAPHIC INTERPRETATION REPORT

CHRONOLOGY OF UFA STATIC TEST FACILITY USSR

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MARCH 1968
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8 PAGES

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CHRONOLOGY OF UFA STATIC TEST FACILITY, USSR

SUMMARY/CONCLUSIONS

This report, a chronology of construction at the Ufa Static Test Facility, presents data useful in determining the relationships of it and various similar test facilities to the overall Soviet rocket engine development, test, and production program. There have been no major changes or additions in the Ufa facility since it was first observed in April 1962. An analysis of the test building at the facility and a comparison with similar horizontal test buildings in the USSR suggest that the facility is engaged in the testing of small rocket engines/components and that it may be testing rocket engines/components produced at known aircraft engine plants located in the same general area.

INTRODUCTION

This report provides a construction chronology of the Ufa Static Test Facility Ufa Rocket Engine Test Facility), USSR, as observed on KEYHOLE photography from April 1962 to November 1967. It also presents a comparative study, based on KEYHOLE photography, of horizontal test buildings* at the Ufa Static Test Facility, the Nizhnyaya Salda Static Test Facility Nizhnyaya Salda Rocket Engine Test Facility), the Zelenogorsk Static Test Facility Zelenogorsk Unidentified Installation), and the Faustovo Rocket Engine Test Facility

The comparative study of the horizontal test buildings at these facilities, which are 4 of 11 known (and 1 suspect) test facilities in the USSR that include such structures, indicates a possible functional relationship between the test facilities and production plants located in the same areas. It lends credence to the possibility that some, if not all, of the production plants known to be aircraft engine producers are also involved in the manufacture of rocket engines/components. The comparison also serves to demonstrate that some of the other horizontal test buildings differ considerably in size and configuration and that only 4 are directly comparable. Previously, all of these structures had been generally categorized as similar, equivalent facilities. The 4 comparable horizontal test buildings have marked similarities in size and configuration and are the principal test buildings in their respective facilities.

*These are buildings containing multiple horizontal firing positions used for "hot-fire" testing of small rocket engines and associated components that utilize such engines as a power source. These structures could also be utilized for a rocket fuels development program as well as other rocket/missile-associated purposes.

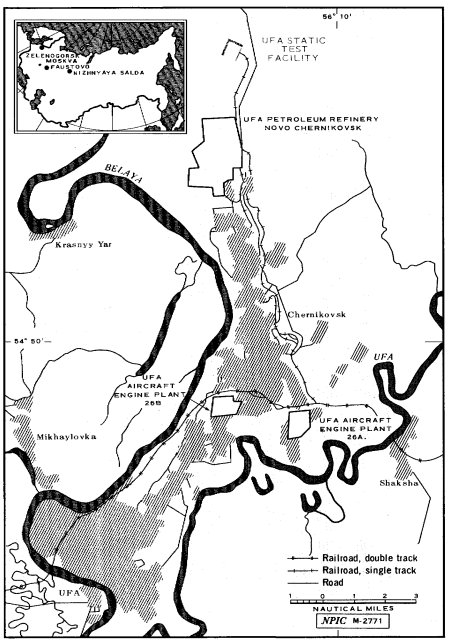

FIGURE 1. LOCATION MAP.

UFA STATIC TEST FACILITY

The Ufa Static Test Facility is located at 54-59N 056-04E, approximately 15 nautical miles (nm) north-northeast of Ufa (Figure 1). The facility (Figure 2) was first observed on KEYHOLE photography At that time, it appeared essentially as it does on November 1967 coverage. A few minor support structures have become apparent since the April 1962 photography, but otherwise the facility appears unchanged.

The installation is road and rail served and consists of 2 separate areas -- a secured test area (Figure 3) and an engineering and support area (Figure 4). The test area contains a horizontal test building (item 17, Figure 3), a shipping/receiving facility (items 2-5), a steamplant (item 13), and an administration building (item 11). The engineering and support area, located alongside the access road, contains 2 probable engineering/laboratory buildings (items 10 and 13, Figure 4), a steamplant (item 7), an administration building (item 12), and various shelters and support structures. Table 1 provides detailed information on the structures in the installation.

The proximity of 2 aircraft engine plants, Ufa Aircraft Engine Plants 26A and 26B, located approximately 10.5 nm south of the static test facility, suggests that the facility could test rocket engines or component parts which are thought to be produced at these plants. 1, 2/ A less strong possibility as to the function of the test facility is fuels research and development. This is suggested by the proximity of the Ufa Petroleum Refinery Novo Chernikovsk located approximately 3.5 nm south of the facility.

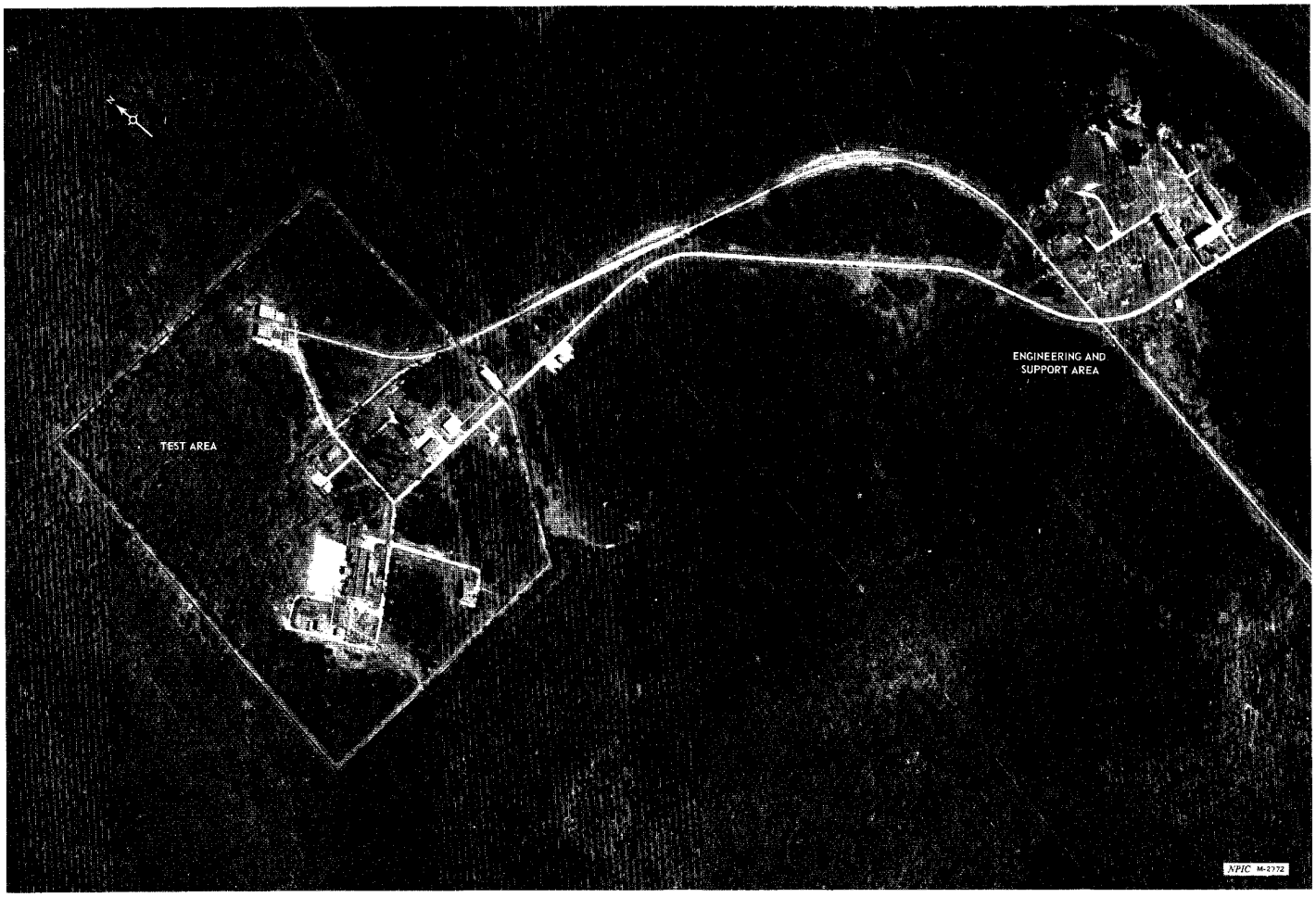

FIGURE 2. UFA STATIC TEST FACILITY, AUGUST 1967.

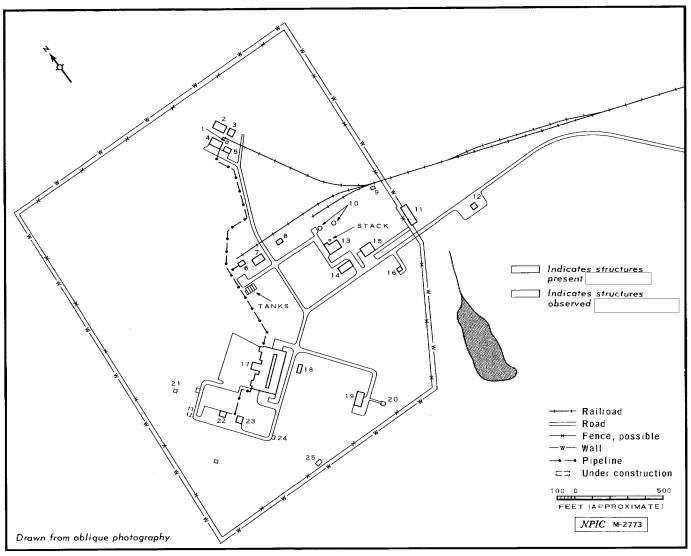

FIGURE 3. LAYOUT OF TEST AREA, UFA STATIC TEST FACILITY.

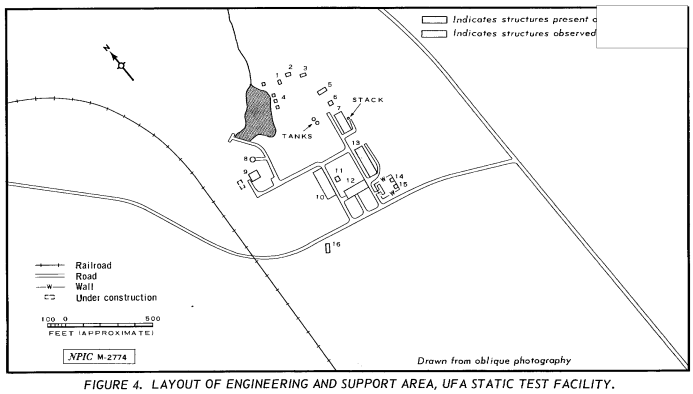

FIGURE 4. LAYOUT OF ENGINEERING AND SUPPORT AREA, UFA STATIC TEST FACILITY.

Table 1. Data on Ufa Static Test Facility
(Item numbers are keyed to Figures 3 and 4)

Note: Heights are accurate to within ±10 ft. Other dimensions (except as noted*) are accurate to within ±5 ft or 5%, whichever is greater. Dimensions are expressed as overall measurements.

Item No	Function/Description	Comments
TEST AREA (FIGURE 3)		
1	Support bldg	Items 1-5 are railed served
2	Shipping/receiving shelter	
3	Shipping/receiving bldg	
4	Shipping/receiving shelter	
5	Shipping/receiving bldg	
6	Support bldg	Four tanks [redacted] and 2 tanks [redacted] are apparently abandoned alongside the access road to the bldg
7	Support shelter	
8	Support bldg	
9	Support bldg	
10	Prob fuel tanks	Two prob tanks
11	Admin bldg	
12	Poss vehicle checkpoint	
13	Steamplant	Has a 50-ft high bay
14	Poss assembly/checkout bldg	
15	Admin bldg	
16	Support bldg	
17	Horizontal test bldg	Roof is 25 ft high on pad side
18	Support bldg	
19	Poss postfire checkout bldg	
20	Support bldg	
21	U/i structure	A small u/i structure to the SE of this structure was first observed [redacted] Construction toward the south of item 21 is evident [redacted] photography
22	Support shelter	
23	Support shelter	A small bldg to the SW was first observed [redacted]
24	U/i bldg	
25	U/i bldg	
	TOTAL F	
ENGINEERING AND SUPPORT AREA (FIGURE 4)		
1	U/i structures/objects	Two items with same measurements
2	Support bldg	
3	Support bldg	
4	U/i structures/objects	Three structures/objects with same measurements
5	Support bldg	
6	U/i bldg/tank	
7	Steamplant	Two small tanks are WNW of item 7
8	Tank	
9	U/i bldg	U/i construction on west side
10	Prob engineering/laboratory bldg	
11	Support bldg	
12	Admin bldg	
13	Prob engineering/laboratory bldg	
14	Support shelter	Items 14 and 15 are within a walled prob storage area
15	Support shelter	Items 14 and 15 are within a walled prob storage area
16	Support bldg	A smaller bldg (later removed) was on east side of item 16 when item was first observed
	TOTAL F	

*Measurements estimated by photo analyst.
**Items were complete when first observed unless otherwise noted.
***Irregular.

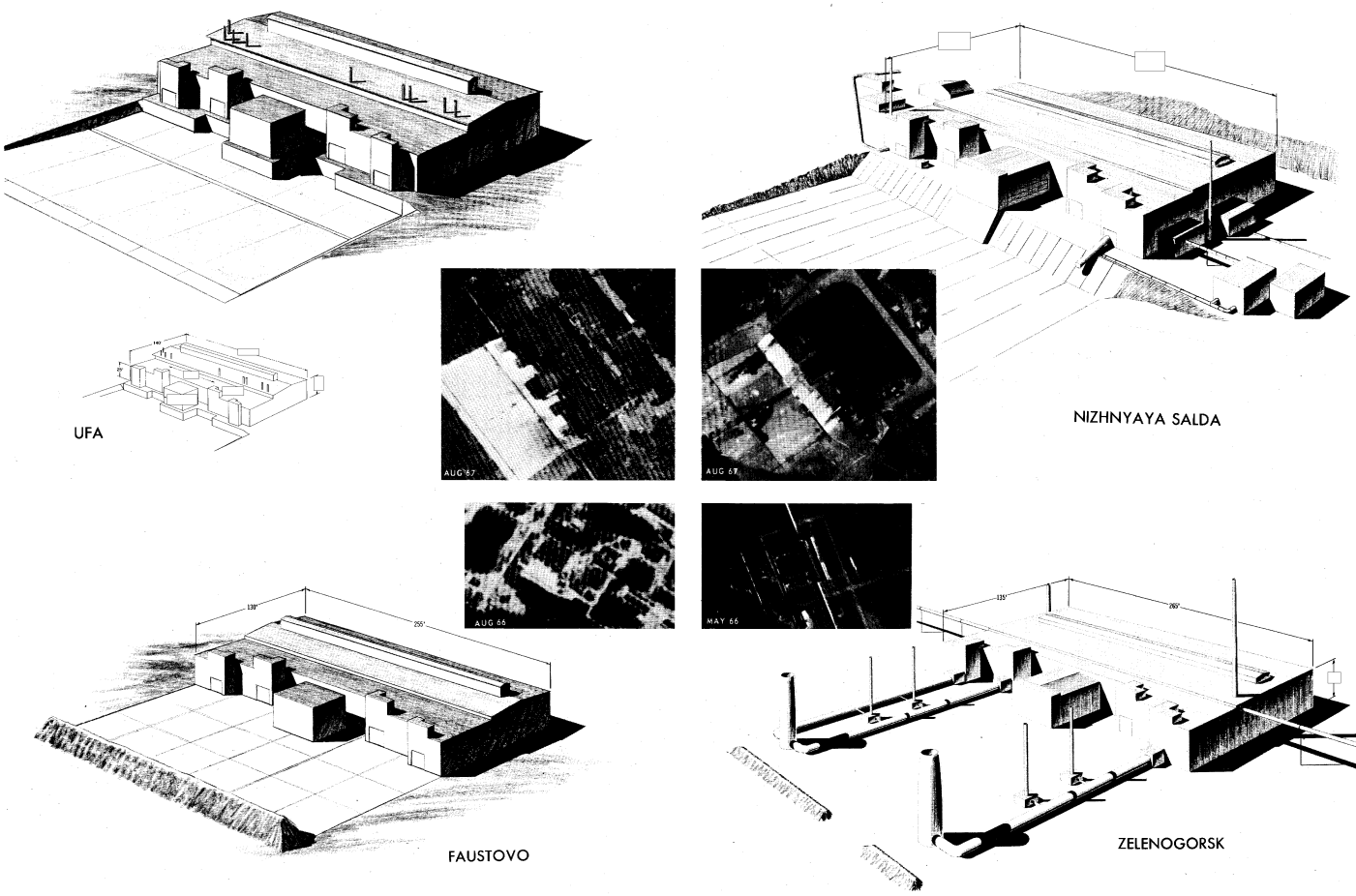

FIGURE 5. ARTISTS' CONCEPTS OF HORIZONTAL TEST BUILDINGS AT 4 FACILITIES.

Table 2. Comparative Data on Selected Horizontal Test Buildings in the USSR

Location of Bldg	Appearance		Function		Dimensions (ft)*			Aprx Roof Cover (sq ft)	Basic Plan** Modified Externally	Estimated No of Test Positions	Has Means of Deflecting Exhaust Flames & Gases	Comments
	Similar to Ufa	Dissimilar to Ufa	Primary Test	Support Test	L	W	H					
Ufa	X		X						No	4	Yes	Has large recessed concrete pad
Nizhnyaya Salda	X		X						Yes	4	Yes	Has large recessed concrete pad; has a prob diffuser at east position
Zelenogorsk	X		X						Yes	4	No	May have ducts leading to 2 large stacks/silencers/ diffusers
Faustovo	X		X						No	4	Yes	Has earth mound on far side of concrete pad
Dnepropetrovsk (DMDPC)		X		X					NA	2-3	Yes	Bldg is asymmetrical; numerous pipes on roof; tall stack
Zlatoust		X	X						NA	4	Yes	Blast deflector [redacted] from bldg
Zagorsk		X		X					NA	4	Yes	Has tall, slender stack
Moskva Khimki 456		X		X					NA	2-3	Yes	Has diffuser and considerable external piping
Voronezh (older bldg)		X		X					Yes	1	Yes	Basic design before modification was similar but not identical to design of Ufa bldg
Voronezh (newer bldg)		X		X					NA	4	Yes	
Moskva Kaliningrad 88		X	X						NA	5	Yes	May have altitude simulation capability

Izhevsk — A suspect horizontal test building is located here. No data on this facility are currently available.

*Accuracy of measurements:
Ufa: ±5 ft or 5% horizontally, whichever greater; ±10 ft vertically
Nizhnyaya Salda: Less than 50 ft, [redacted] whichever greater; greater than 50 ft, ±5 ft or 5%
Zelenogorsk: ±5 ft or 7%, whichever greater
Faustovo: ±10 ft
DMDPC: ±5 ft or 5% horizontally, whichever greater; ±10 ft vertically
Zlatoust: ±5 ft or 5% horizontally; [redacted] whichever greater
Zagorsk: ±5 ft or 5% horizontally, whichever greater; ±5 ft vertically
Moskva Khimki 456: [redacted] ±5 ft or 5% vertically, whichever greater
Voronezh: ±6%
Moskva Kaliningrad 88: ±5%
**Basic plan, for purposes of this table, is the plan of the Ufa bldg.

HIGHLIGHTS OF CHRONOLOGY

1962

KH-4 photography of fair interpretability showed the facility to be essentially complete. The roof cover in the test area was 75,306 square feet. 25X1

1963

KH-4 photography of poor interpretability revealed the addition of a tank (item 8, Figure 4) and an unidentified building (item 9) in the engineering and support area.

1964

The first KH-7 coverage of the facility, in September 1964, showed a new or previously indiscernible unidentified building/tank (item 6, Figure 4) in the engineering and support area. 25X1

1965

KH-7 coverage of good interpretability permitted observation of 4 support buildings (items 2, 3, 5, and 11, Figure 4), 2 tanks (west-northwest of item 7), and several structures/objects in the engineering and support area and 4 small structures in the test area.

1966

KH-7 coverage of good interpretability revealed 3 small structures -- 1 (item 21, Figure 3) in the test area and 2 (items14 and 15, Figure 4) in the engineering and support area.

1967

[redacted] of good interpretability revealed the addition of an unidentified building (item 24, Figure 3), a small unidentified structure southeast of item 21, and evidence of a small building under construction and another small building south of item 21. The roof cover in the test area had increased to 75,754 square feet. 25X1 25X1 25X1 25X1

HORIZONTAL TEST BUILDINGS COMPARED

Similarities as well as dissimilarities have been observed in the horizontal test buildings located at various installations in the USSR. Buildings having an appearance similar to the horizontal test building at Ufa are found at the Nizhnyaya Salda Static Test Facility, the Zelenogorsk Static Test Facility, and the Faustovo Rocket Engine Test Facility. Installations having horizontal test buildings dissimilar to the Ufa building are the test facility of the Dnepropetrovsk Missile Development and Production Center (DMDPC, , the Zlatoust Armaments Plant 66 the Zagorsk Rocket Engine Test Facility Krasnozavodsk the Moskva Missile and Space Propulsion Development Center Khimki 456 the Voronezh Rocket Engine Test Facility and the Moskva Missile and Space Development Center Kaliningrad 88 The older of 2 horizontal test buildings at the Voronezh installation was similar to the Ufa building in appearance when first built, but subsequent modifications have resulted in a unique appearance, and therefore it is not considered in this discussion as a similar building. A newer horizontal test building at Voronezh is also dissimilar to the Ufa building.

Artists' concepts of the 4 similar horizontal test buildings with insets of the best available photography of each building are presented in Figure 5. Recent photography of the Ufa and Nizhnyaya Salda installations is of good interpretability, but available photography of the Faustovo (KH-4 coverage) and Zelenogorsk (KH-7 coverage) installations is of smaller scale and of comparatively poor interpretability. Data, including measurements, on both the similar and dissimilar buildings are presented in Table 2 to facilitate comparisons. The remainder of this report consists of descriptions of the similar horizontal test buildings and general comment on features they have in common.

UFA

The horizontal test building at the Ufa Static Test Facility (Figure 5 and item 17, Figure 3) appears to contain 4 test positions, from which the test article is fired horizontally over an apparently level portion of the adjoining apron. This level portion of the apron constitutes approximately one-third of the total pad area, and it is below the grade on which the building is sited. The deflector portion of the apron appears to incline back to grade as shown in the perspective drawing (see Figure 5).

Dark stains suggesting the presence of hydrocarbon residue have been observed on the pad since August 1963. The facility possibly provides for sea level testing of small rocket engines or of components which may be produced at Ufa Aircraft Engine Plant 26A located at 54-48N 056-07E, and/or Ufa Aircraft Engine Plant 26B located at 54-58N 056-04E. 1, 2/

NIZHNYAYA SALDA

The horizontal test building at the Nizhnyaya Salda Static Test Facility (58-09N 060-56E) physically resembles the building at the Ufa facility, although the configuration of the blast deflector and the mensuration differ. The building appears to have 4 test positions, one of which is believed to have an altitude simulation capability because of the presence of a probable diffuser at 1 position.

The apron across which the 4 positions apparently fire is at grade for approximately one-sixth of its total length, drops sharply for approximately the same distance, and then inclines back to grade.

The Perm Aircraft Engine Plant Stalin 19 located at 57-59N 056-15E, is the nearest known aircraft engine plant; however, the articles tested at the Nizhnyaya Salda facility may be manufactured locally.

FAUSTOVO

The horizontal test building at the Faustovo Rocket Engine Test Facility (55-28N 038-30E) is similar to the Ufa building in appearance but has smaller dimensions. The building configuration suggests that is also contains 4 firing positions for sea level testing. The apron appears to be level, and it has a protective barricade along the outermost edge.

As in the case of the other facilities under discussion, a relationship is possible between the facility and an aircraft engine plant. The engine plant possibly related to the horizontal test building at Faustovo may be Moskva Aircraft Engine Plant Tushino 500 located at 55-50N 037-26E.

ZELENOGORSK

The horizontal test building at the Zelenogorsk Static Test Facility (60-14N 029-43E) resembles the building at Ufa, but its dimensions correspond more closely to those of the building at Nizhnyaya Salda. The Zelenogorsk building probably has 4 test positions, 3 of which apparently have an altitude simulation capability. The fourth position shows no evidence of the protection which is commonly associated with this type of building, suggesting that this position may not be used in a "hot-fire" capacity.

The Zelenogorsk facility may have a relationship with an aircraft engine plant as in the cases of Ufa and Faustovo. The plant possibly related to this facility could be Leningrad Aircraft Engine Plant 466 located at 59-60N 030-22E.

GENERAL COMMENT

Each of the 4 similar horizontal test buildings described in the foregoing paragraphs is the principal test structure of its respective facility. Except for the horizontal test buildings at Zlatoust Armaments Plant 66 and the Moskva Kaliningrad 88 facility, the previously mentioned buildings at the Dnepropetrovsk, Moskva Khimki 456, Zagorsk, and Voronezh installations probably provide for test functions that are in support of the primary test functions of their respective facilities.

A suspect test building which may eventually be identified as comparable with the 4 similar buildings discussed in this report has been seen at the Izhevsk Suspect Rocket Engine/Components Test Facility, located at 56-56N 053-24E.

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REFERENCES (Continued)

25X1

MAPS OR CHARTS

ACIC, USATC, Series 200, Sheet 0165-10

ACIC, USATC, Series 100, Sheet 0165-9897A

ACIC, USATC, Series 25, Sheet 0165-9897-2-25MA

DOCUMENTS

1. CBNRC. 3/U/RU-A/R156-66, issued N2/13 May 66 (TOP SECRET RUFF TRINE)

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REQUIREMENT

CIA. C-DI5-82,973

NPIC PROJECT

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